

# **Conceptual Feasibility of a Sub-Regional Lower East Coast Water Supply Solution**

## **Status Update to the Broward County Water Resources Task Force**

April 3, 2009

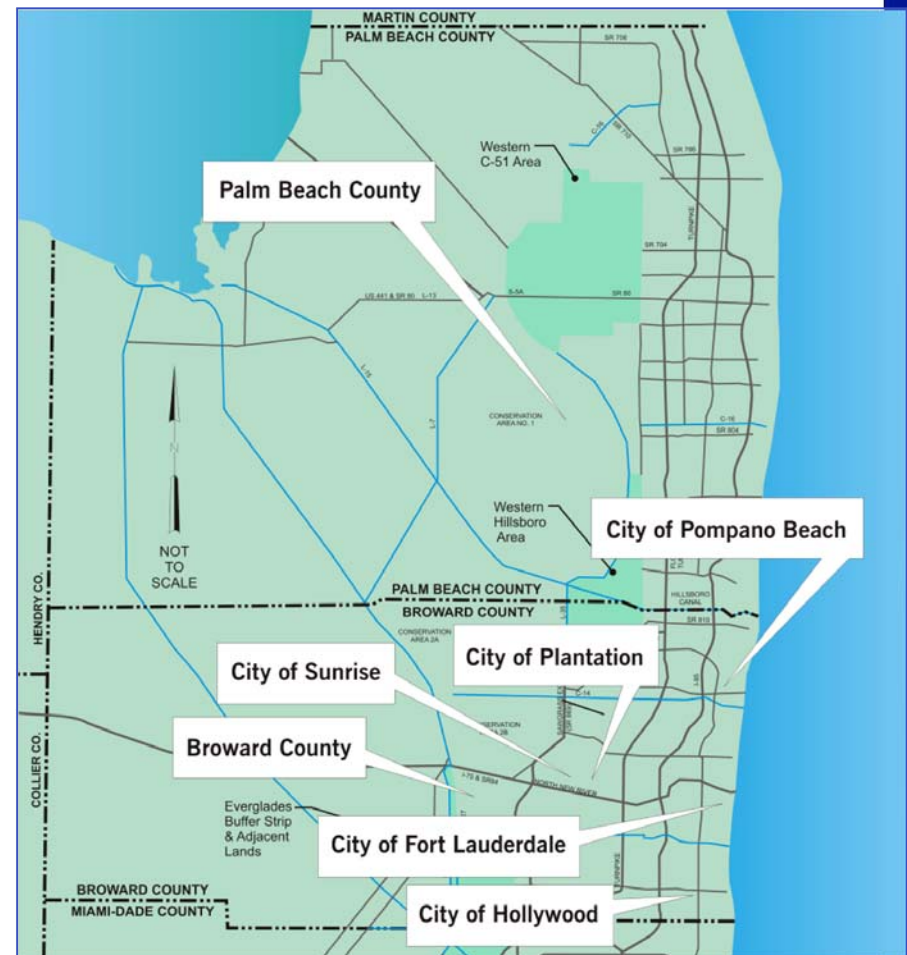
Presenter: Albert Carbon, P.E.

# Purpose

- Meet environmental restoration objectives
- Respond to the need for additional potable water supplies in Southeast Florida
- Develop a framework for a Regional Water Supply Solution

# Conceptual Feasibility of a Sub-Regional Lower East Cost Water Supply Solution

- 7 Utilities
  - Broward and Palm Beach Counties
    - Broward County, Palm Beach County, Sunrise, Plantation, Hollywood, Pompano Beach, and Fort Lauderdale.





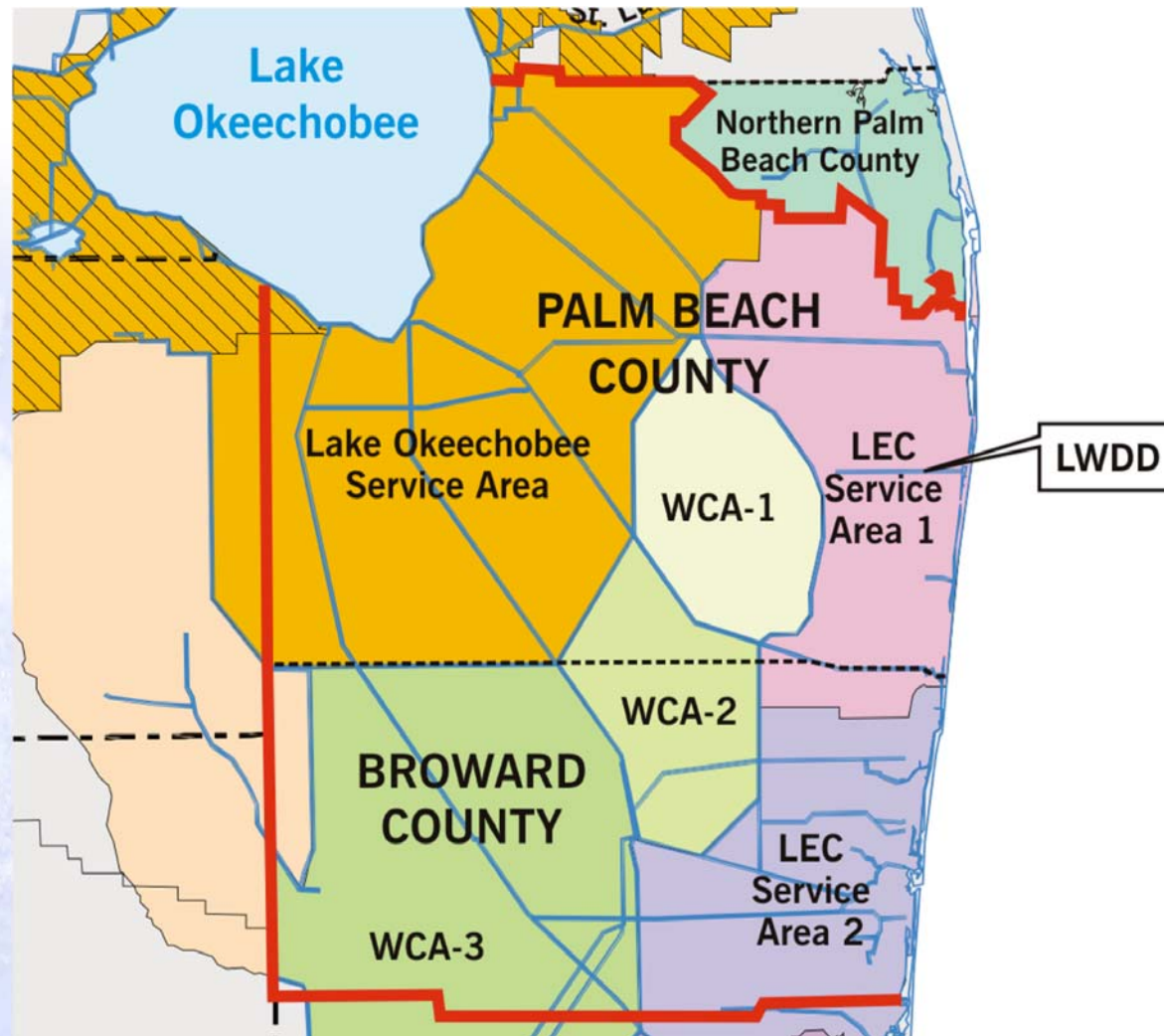
# Conceptual Feasibility of a Sub-Regional Lower East Cost Water Supply Solution

Interlocal Agreement: Signed January 2007

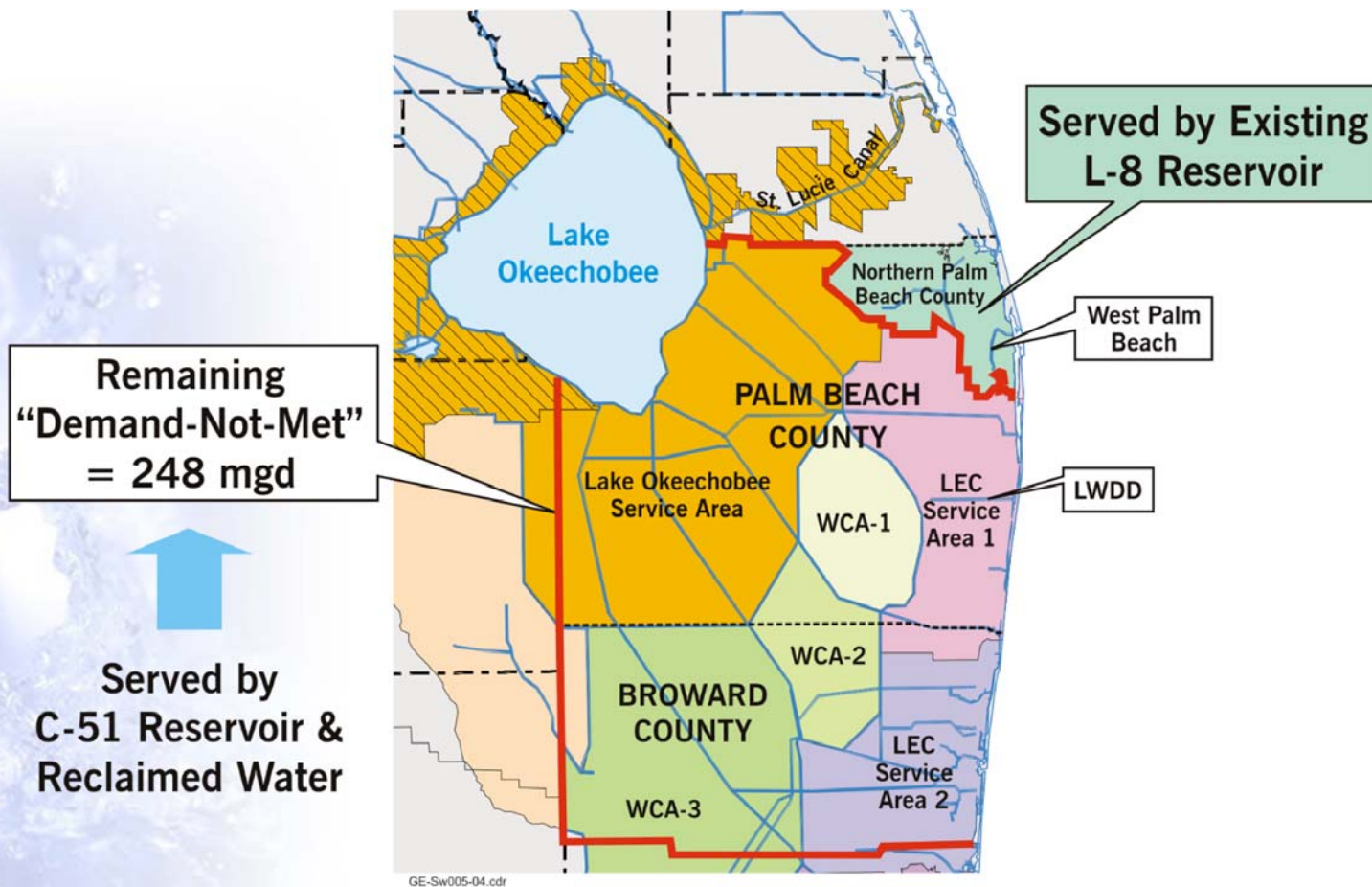
- Raw Water Requirements
- Alternative Water Supply Sources
- Hydrologic Modeling
- Facilities Plan
- Presentations / Meetings



# Study Area



# Results

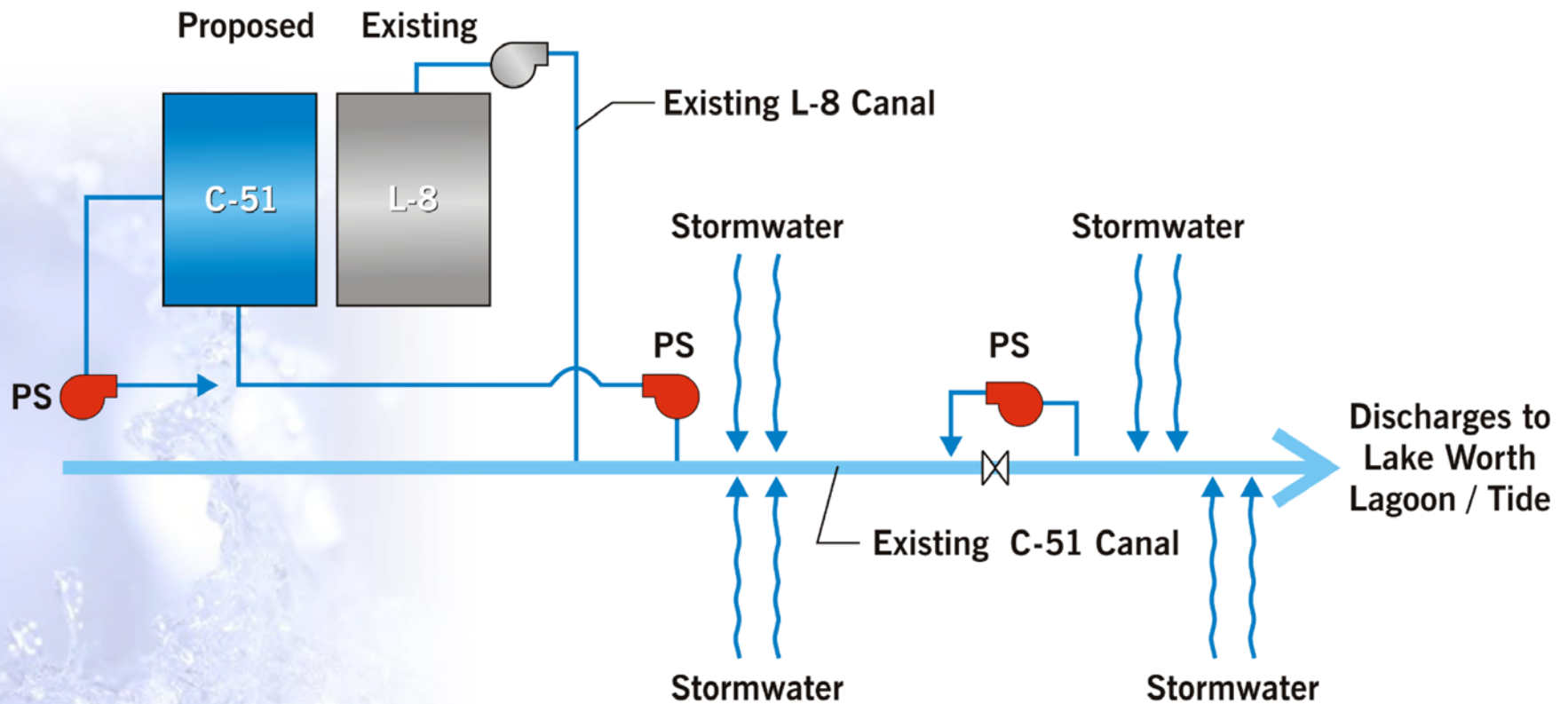




## Results (continued)

- Remaining 248 mgd “demand-not-met” requires 186 mgd new water (raw)
  - 248 mgd times 75% equals 186 mgd of raw water
  - 100 gallons of new water would allow extraction of 133 gallons.
- C-51 provides 120 mgd raw water
- ∴ 66 mgd other “Alternative Water Supply” required
- Environmentally beneficial
  - Lake Work Lagoon
  - Smallest carbon footprint

# How to use C-51

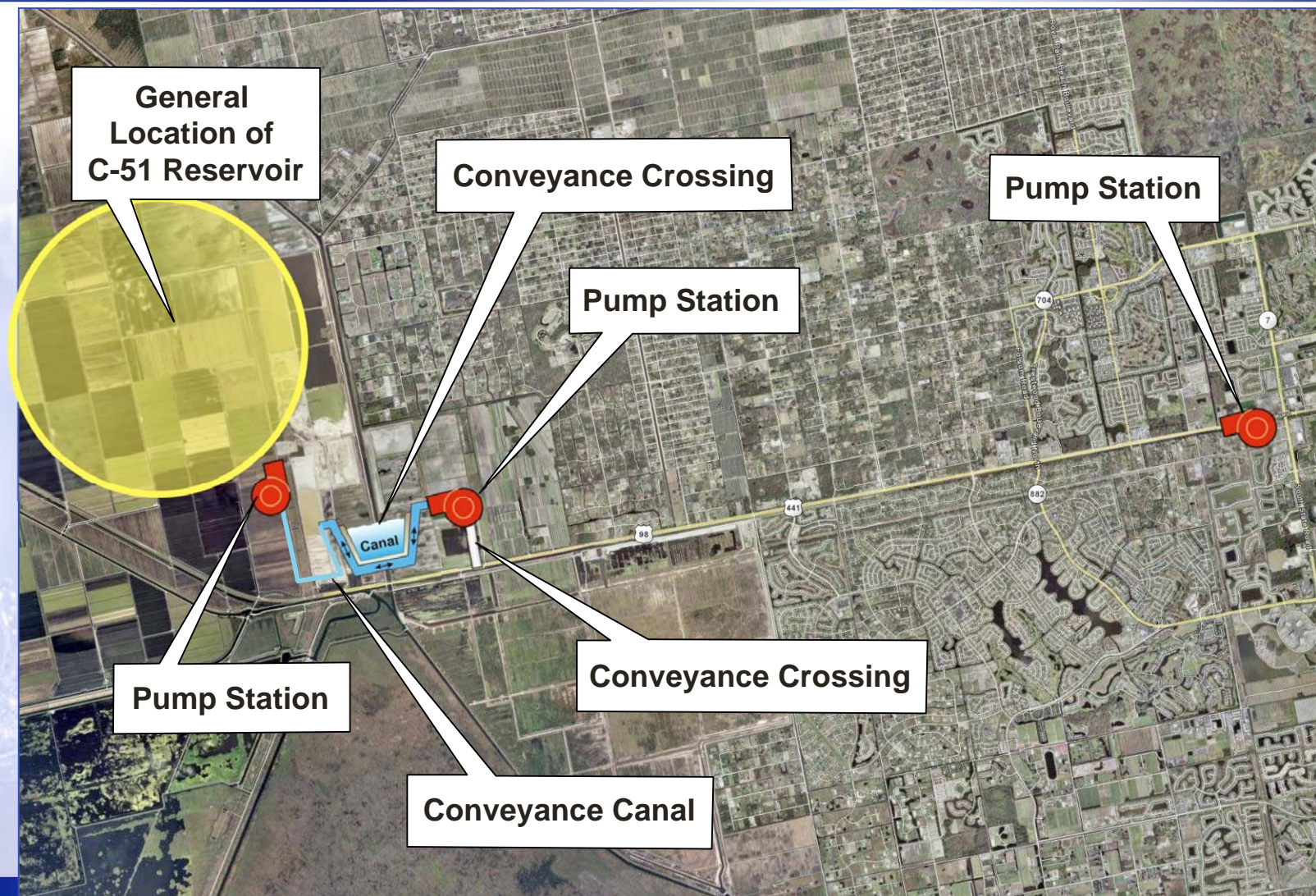


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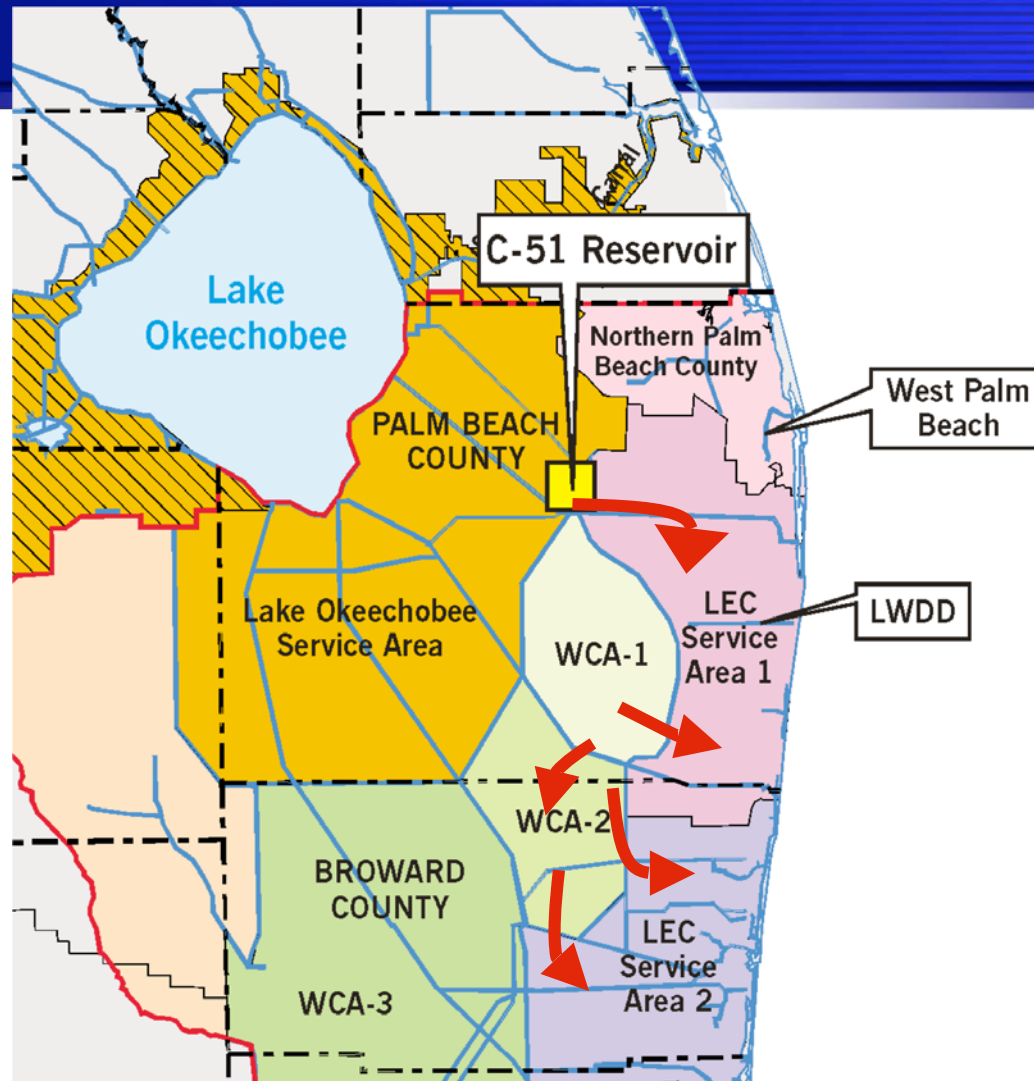
**Major Facilities**



# General facilities layout



# Cascade Effect





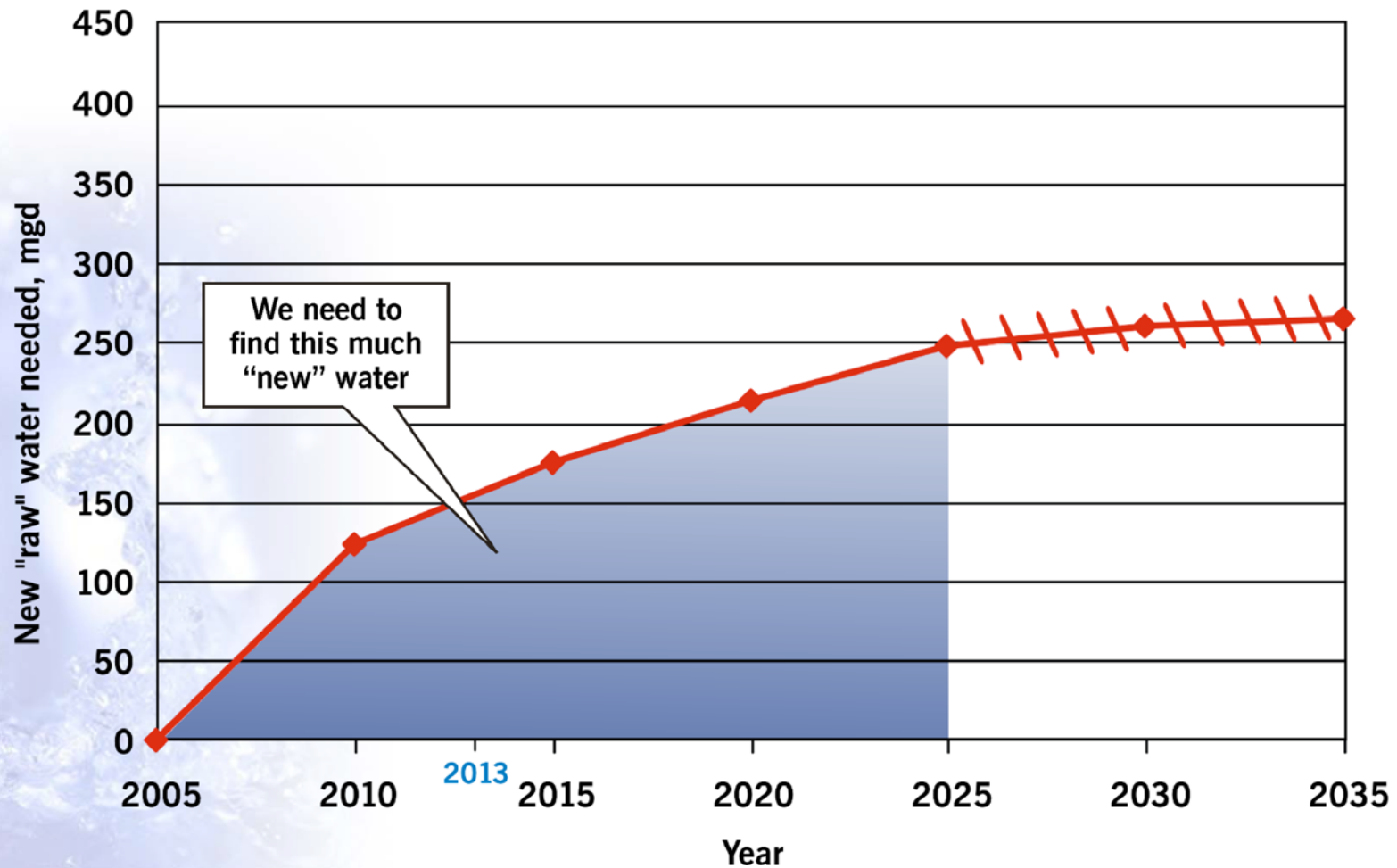
# C-51 Reservoir Capital Costs

Component		Capital Cost (Millions)
1.	C-51 Reservoir Construction	\$274
2.	C-51 Reservoir Water Supply Pump Station	\$42
3.	S155A Pump Station	\$9
4.	US98 / SR80 Conveyance Crossing	\$6
5.	S5AE Pump Station	\$11
6.	L-8 Canal Conveyance Crossing	\$5
7.	C-51 Reservoir Conveyance Canal and Inflow Structure	\$6
8.	Place holder for 298 District Improvements	\$10 <sup>(1)</sup>
<b>Total:</b>		<b>≈ \$363</b>

Produces:  $120 \div 0.75 = 160$  mgd raw water  
 $160 \times 0.85 = 136$  mgd finished water (assuming membrane treatment)  
 $\$363\text{M} \div 136 \text{ mgd} \approx \mathbf{\$2.70/\text{gal}}$

(1) Place holder

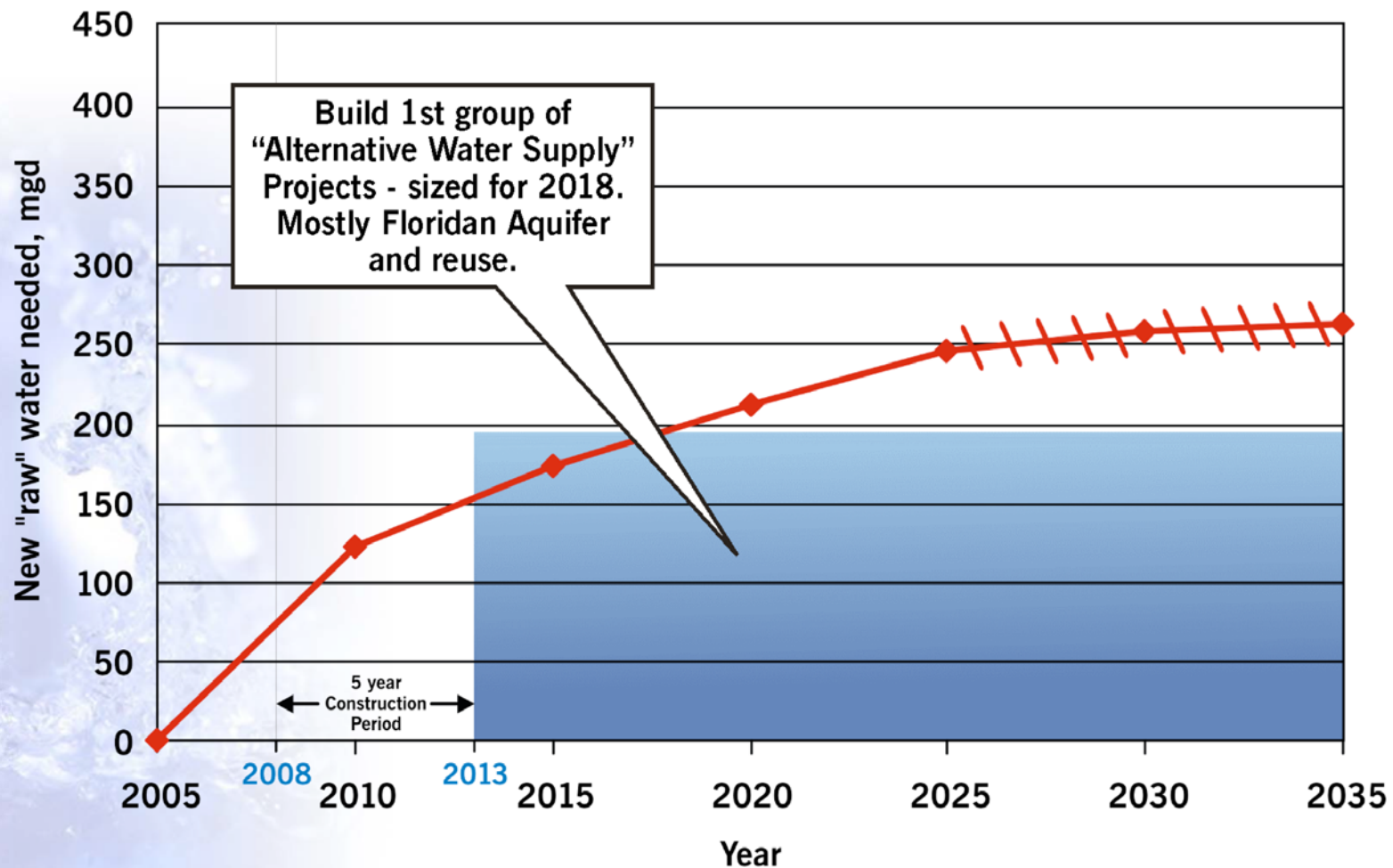
# So where are we?



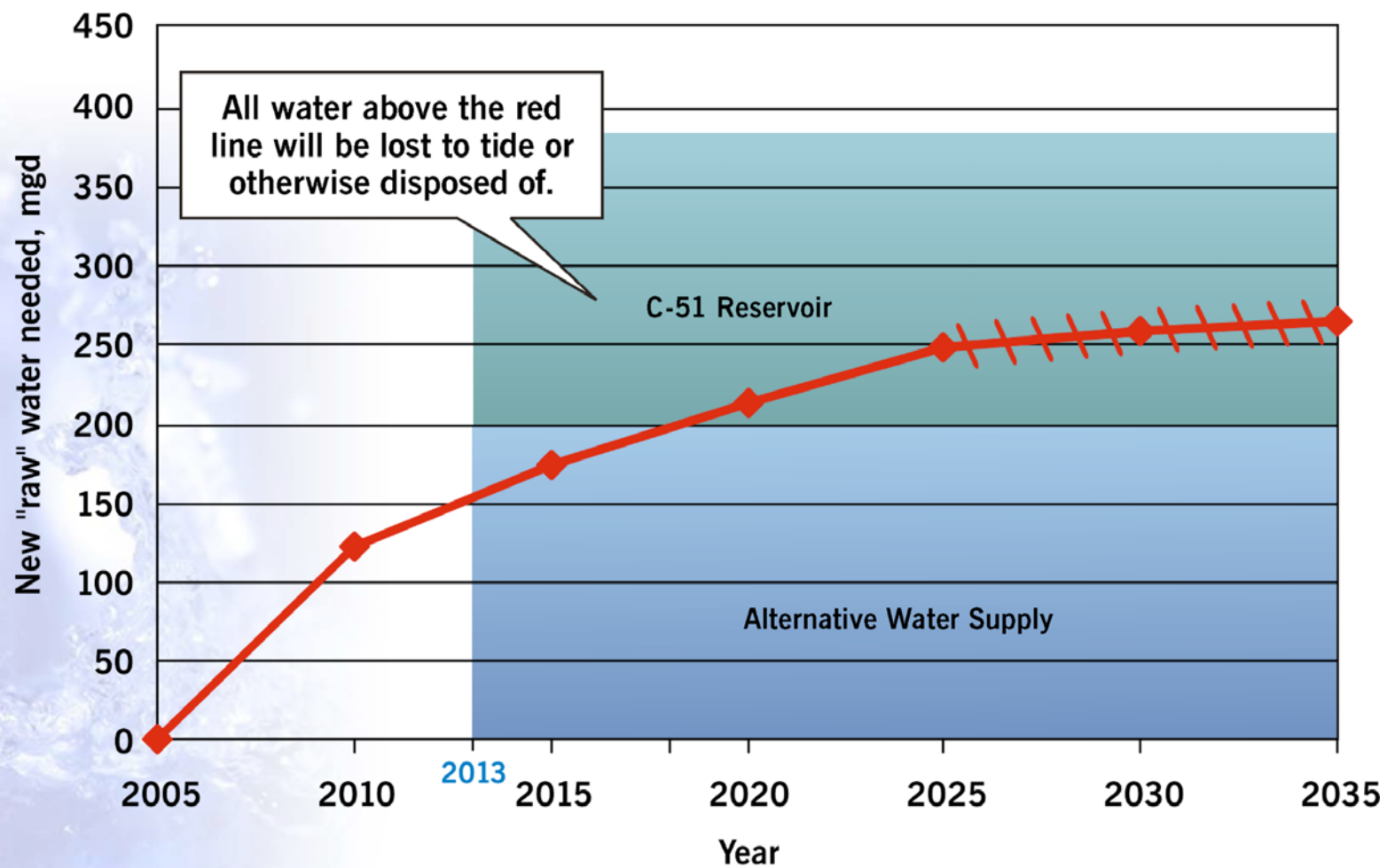
"New" water represents Palm Beach and Broward counties not including the North Palm Beach County Regional Service Area



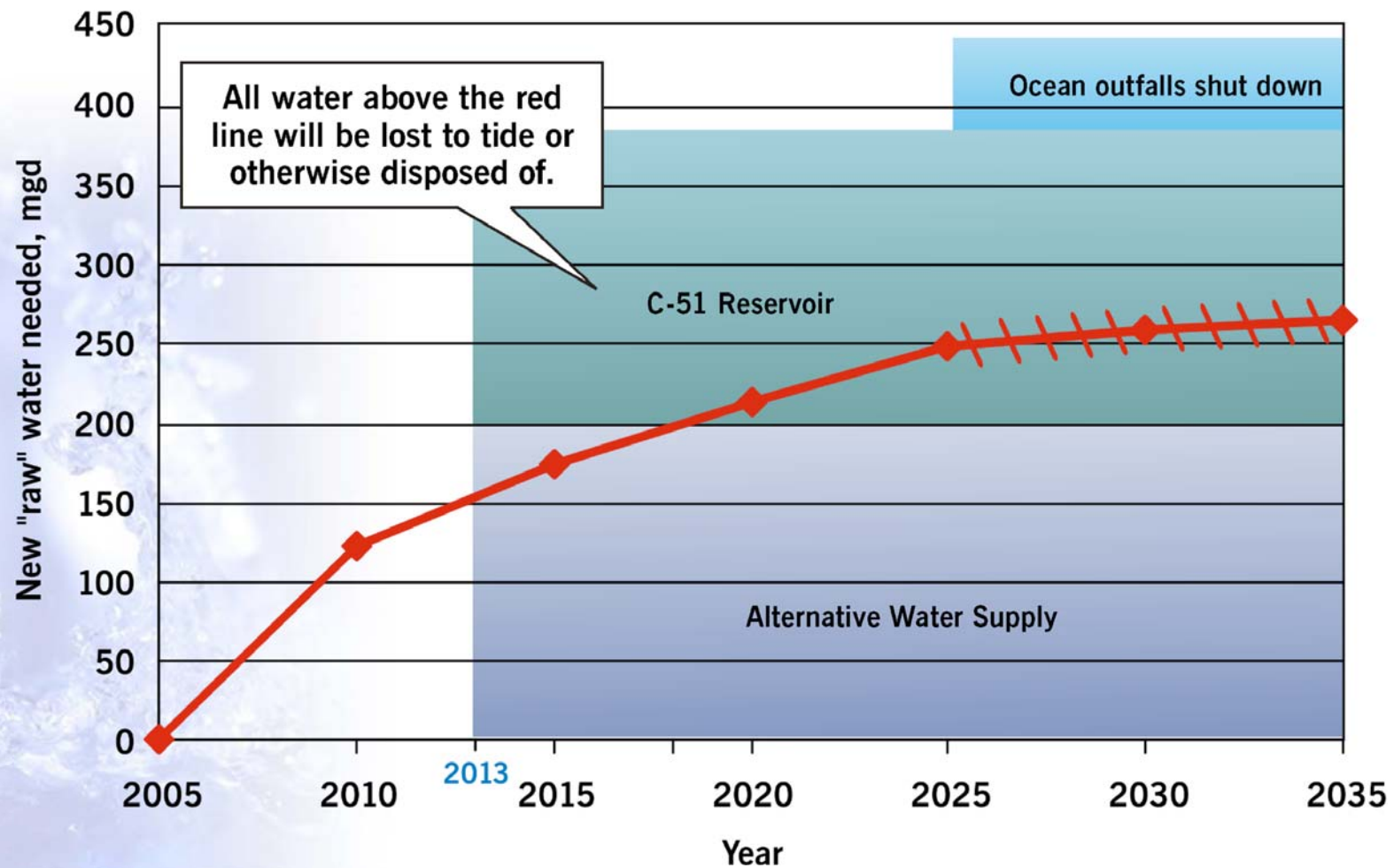
# Current Efforts – First Ten Years Mandated by DCA



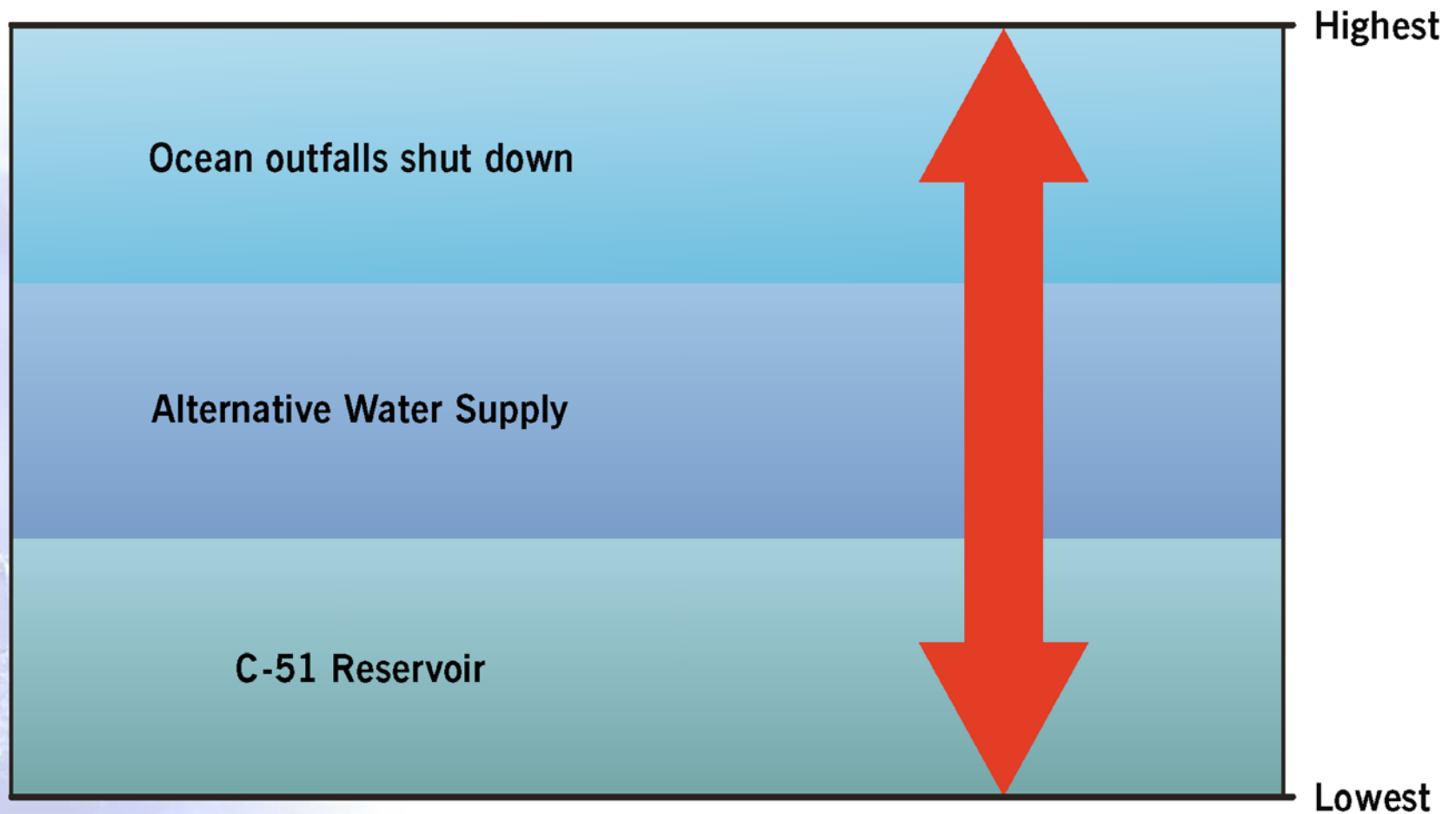
# C-51 Reservoir



# Legislated Shutdown of Ocean Outfalls

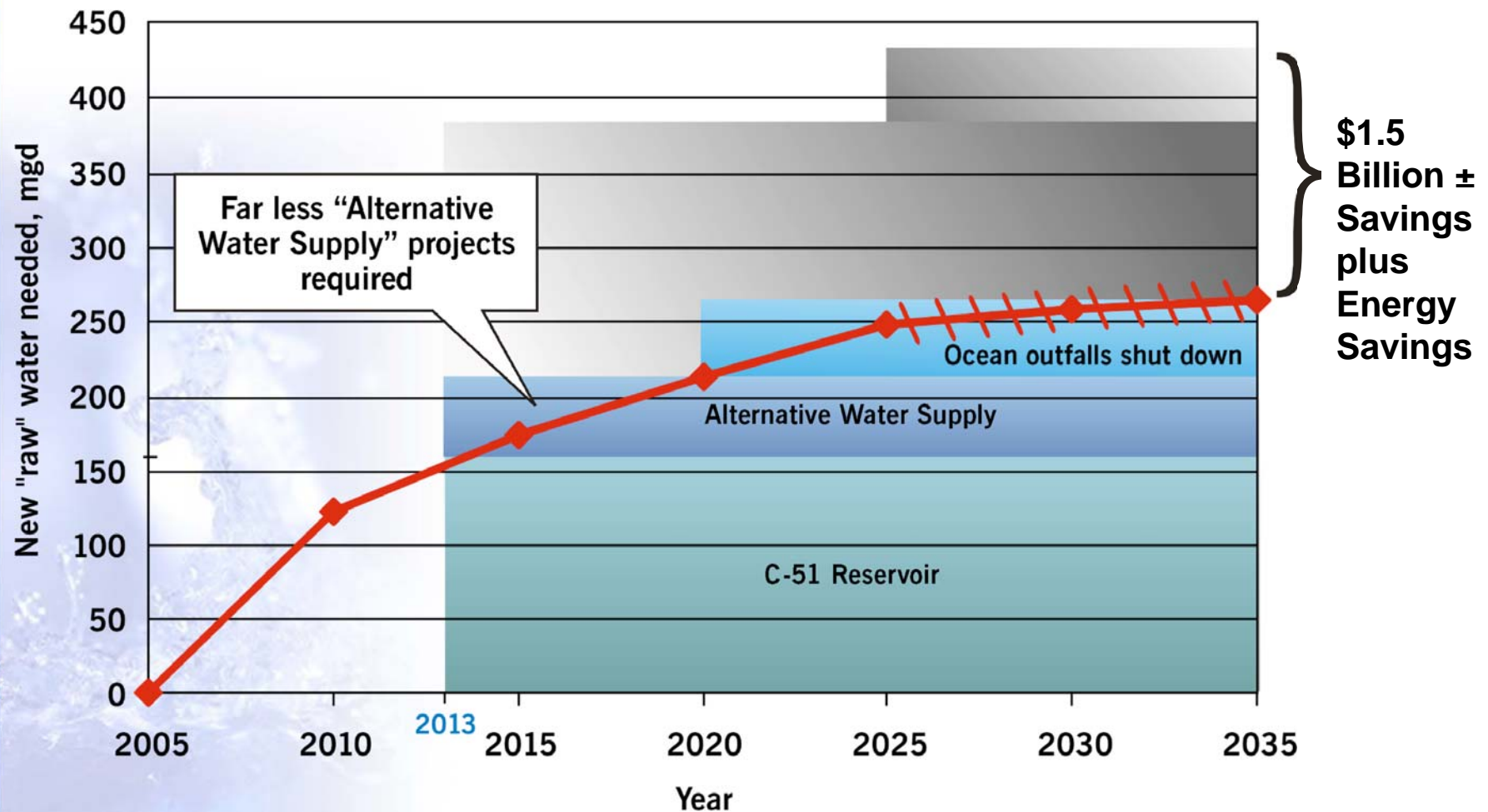


# Relative Energy Use and Capital Costs of Alternatives





# What if AWS projects were re-scheduled, optimizing sustainable design concepts?



# Next Steps

- Meet with Senior District staff to present Study
  - Leadership Roles
  - Additional Technical needs
  - Administrative/Legal framework
  - Develop Next Phase Scope

## Next Steps – Technical

- WMD Optimization of model to determine allowable water credits from C-51 reservoir
- WMD Use of 2x2 model to evaluate performance of C-51 reservoir for regional environmental and water supply performance measures.
- WMD/Utilities Finalize Design elements

## Next Steps – Administrative/Legal

- Costs C-51 reservoir and credits – identify vehicle for purchase
- Agreements
  - Utility District – Permit modifications with use of offset, schedule for applications, LEC plan update, DCA tie in
  - Identification of Legislative changes to allow long term permits/credits
  - Implementation process – rules – credit process, permit duration, service area
  - Property/District/Utility – design requirements, delivery schedule